

CLAIMS

1. A method of manufacturing a torque converter fluid coupling member comprising:

forming a plurality of hollow tubes having first and second ends;

and

5 connecting said plurality of tubes together side-by-side in an annular array such that fluid may be carried through each tube from the first end to the second end, thereby forming the fluid coupling member.

2. The method of claim 1, wherein the torque converter fluid coupling member comprises a turbine.

3. The method of claim 1, wherein the torque converter fluid coupling member comprises a pump.

4. The method of claim 1, wherein said forming step comprises hydroforming.

5. The method of claim 1 wherein said connecting step comprises tack welding ends of adjacent tubes together.

6. The method of claim 1, wherein each said first end is positioned at an inner periphery of the annular array and each said second end is positioned at an outer periphery of the annular array.

7. The method of claim 1, wherein each said first end is positioned at an outer periphery of the annular array and each said second end is positioned at an inner periphery of the annular array.

8. The method of claim 1, wherein each of said tubes comprises a low carbon steel.

9. The method of claim 1, wherein said plurality of tubes comprises a prime number of tubes.

10. The method of claim 2, further comprising welding a support ring to said tubes.

11. A torque converter fluid coupling member comprising:
a plurality of hollow steel tubes connected together side-by-side in an annular array wherein fluid may be carried through each tube from one end to another to form the fluid coupling member.

12. The torque converter fluid coupling member of claim 11, wherein said fluid coupling member comprises a turbine.

13. The torque converter fluid coupling member of claim 11, wherein said fluid coupling member comprises a pump.

14. The torque converter fluid coupling member of claim 11, wherein adjacent ones of said tubes are welded together.

15. The torque converter fluid coupling member of claim 11, wherein a first end of each said tube is positioned at an inner periphery of the annular array and a second end of each said tube is positioned at an outer periphery of the annular array.

16. The torque converter fluid coupling member of claim 11, wherein a first end of each said tube is positioned at an outer periphery of the annular array and a second end of each said tube is positioned at an inner periphery of the annular array.

17. The torque converter fluid coupling member of claim 11, wherein each said tube comprises a low carbon steel.

18. The torque converter fluid coupling member of claim 13, further comprising a support ring connected to said tubes.

19. A torque converter turbine assembly comprising:
a plurality of hydroformed steel tubes connected together side-by-side in an annular array such that fluid may be carried through each tube from one end to another;

5 wherein a first end of each said tube is positioned at an inner periphery of the annular array and a second end of each said tube positioned at an outer periphery of the annular array;

 wherein side walls of said tubes are operative as turbine blades;
and

10 a turbine hub connected to said tubes.